CONGENERIC SUCCESSION OF METROSIDEROS IN HAWAII

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Classical succession usually results in the replacement of pioneer species by unrelated species belonging to separate genera. In some situations elsewhere, however, congeneric succession occurs whereby related, and sometimes interbreeding, species are known to occur sequentially in community development. Present studies of 'ohi'a (Metrosideros, MYRTACEAE) have investigated three aspects of the successional nature of different varieties. Comparison of the varietal distribution on adjacent young and older flows has presented spatial and temporal evidence for the successional nature of certain varieties. Physiological differences in terms of water relations have been demonstrated which indicate the varieties which occur in pioneer situations are more drought-adapted than their older forest counterparts. When grown in a common garden the morphological and physiological differences between these varieties are maintained. This evidence for congeneric succession of Metrosideros on the young volcanoes of Mauna Loa and Kilauea supports the hypothesis that native Hawaiian plants have evolved into the various niches which occur in these islands.